

46342/55965

09/857815

1/22

531 Rec'd PCT. 08 JUN 2001

## SEQUENCE LISTING

&lt;110&gt; Takeda Chemical Industries, Ltd.

&lt;120&gt; Betacellulin Mutein

&lt;130&gt; 2576W00P

&lt;150&gt; JP 10-350377

&lt;151&gt; 1998-12-09

&lt;150&gt; JP 11-55326

&lt;151&gt; 1999-03-03

&lt;160&gt; 56

&lt;210&gt; 1

&lt;211&gt; 77

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 1

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

10

15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50

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60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp

65

70

75

&lt;210&gt; 2

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&lt;211&gt; 76

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 2

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1 5 10 15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20 25 30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35 40 45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50 55 60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val

65 70 75

&lt;210&gt; 3

&lt;211&gt; 47

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 3

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1 5 10 15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

20 25 30

Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp

35 40 45

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Cont  
B19

&lt;210&gt; 4

&lt;211&gt; 46

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 4

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1

5

10

15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

20

25

30

Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val

35

40

45

&lt;210&gt; 5

&lt;211&gt; 79

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 5

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

10

15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50

55

60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu Phe Tyr

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Cont  
B19

4/22

65

70

75

<210> 6

<211> 78

<212> PRT

<213> Artificial Sequence

<400> 6

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

10

15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50

55

60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu Phe

65

70

75

<210> 7

<211> 77

<212> PRT

<213> Artificial Sequence

<400> 7

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

10

15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

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Cont  
B19

5/22

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50

55

60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu

65

70

75

<210> 8

<211> 79

<212> PRT

<213> Artificial Sequence

<400> 8

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

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15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50

55

60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Phe Tyr

65

70

75

<210> 9

<211> 78

<212> PRT

<213> Artificial Sequence

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6/22

<400> 9

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1 5 10 15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20 25 30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35 40 45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50 55 60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Phe

65 70 75

<210> 10

<211> 49

<212> PRT

<213> Artificial Sequence

<400> 10

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1 5 10 15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

20 25 30

Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu Phe

35 40 45

Tyr

<210> 11

<211> 48

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Cont  
B19

7/22

<212> PRT

<213> Artificial Sequence

<400> 11

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1

5

10

15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

20

25

30

Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu Phe

35

40

45

<210> 12

<211> 47

<212> PRT

<213> Artificial Sequence

<400> 12

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1

5

10

15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

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Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu

35

40

45

<210> 13

<211> 49

<212> PRT

<213> Artificial Sequence

<400> 13

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B19

8/22

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1 5 10 15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

20 25 30

Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Phe

35 40 45

Tyr

<210> 14

<211> 48

<212> PRT

<213> Artificial Sequence

<400> 14

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

1 5 10 15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys

20 25 30

Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Phe

35 40 45

<210> 15

<211> 231

<212> DNA

<213> Artificial Sequence

<400> 15

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60

AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120

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Cont  
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CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180

TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA C 231

<210> 16

<211> 228

<212> DNA

<213> Artificial Sequence

<400> 16

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60

AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120

CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180

TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTT 228

<210> 17

<211> 141

<212> DNA

<213> Artificial Sequence

<400> 17

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTTGA C 141

<210> 18

<211> 138

<212> DNA

<213> Artificial Sequence

<400> 18

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

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Cont  
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10/22

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTT 138

<210> 19

<211> 237

<212> DNA

<213> Artificial Sequence

<400> 19

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60

AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120

CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180

TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTTT GTTTAC 237

<210> 20

<211> 234

<212> DNA

<213> Artificial Sequence

<400> 20

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60

AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120

CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180

TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTTT GTTT 234

<210> 21

<211> 231

<212> DNA

<213> Artificial Sequence

<400> 21

Cont  
B9

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Cont  
319

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60  
 AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120  
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180  
 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTT G 231

<210> 22

<211> 237

<212> DNA

<213> Artificial Sequence

<400> 22

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60  
 AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120  
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180  
 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTTAC 237

<210> 23

<211> 234

<212> DNA

<213> Artificial Sequence

<400> 23

GATGGGAATT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60  
 AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120  
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180  
 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTT 234

<210> 24

<211> 147

<212> DNA

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<213> Artificial Sequence

<400> 24

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTTTT GTTTTAC 147

<210> 25

<211> 144

<212> DNA

<213> Artificial Sequence

<400> 25

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTTTT GTTT 144

<210> 26

<211> 141

<212> DNA

<213> Artificial Sequence

<400> 26

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTTTT G 141

<210> 27

<211> 147

<212> DNA

<213> Artificial Sequence

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Cont  
3/19

&lt;400&gt; 27

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTTGA CTTTAC 147

&lt;210&gt; 28

&lt;211&gt; 144

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 28

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60

TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA 120

GCAAGGTGTG AGAGAGTTGA CTTT 144

&lt;210&gt; 29

&lt;211&gt; 31

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 29

CATATGGATG GGAATTCCAC CAGAAGTCCT G 31

&lt;210&gt; 30

&lt;211&gt; 33

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 30

GGATCCCTAG TCAACTCTCT CACACCTTGC TCC 33

&lt;210&gt; 31

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Cont  
B19

<211> 24

<212> DNA

<213> Artificial Sequence

<400> 31

AGAGTCAAGG ATCCCCAAC CACT

24

<210> 32

<211> 22

<212> DNA

<213> Artificial Sequence

<400> 32

AGCTGGTCAC TTAGGGCTGG GG

22

<210> 33

<211> 26

<212> DNA

<213> Artificial Sequence

<400> 33

GAATCGATAG AGTCAAGGAT CCCCCA

26

<210> 34

<211> 22

<212> DNA

<213> Artificial Sequence

<400> 34

GACTCGAGCT GGTCACCTAG GG

22

<210> 35

<211> 80

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Gut  
319

&lt;212&gt; PRT

&lt;213&gt; Human

&lt;400&gt; 35

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

10

15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

50

55

60

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Leu Phe Tyr

65

70

75

80

&lt;210&gt; 36

&lt;211&gt; 240

&lt;212&gt; DNA

&lt;213&gt; Human

&lt;400&gt; 36

GATGGGAAT CCACCAGAAG TCCTGAAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60

AACTGTCCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120

CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC 180

TCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTGTTTTAC 240

&lt;210&gt; 37

&lt;211&gt; 75

&lt;213&gt; Artificial Sequence

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Gout  
319

&lt;400&gt; 37

Gly Asn Ser Thr Arg Ser Pto Glu Thr Asn Gly Leu Leu Cys Gly Asp

1 5 10 15

Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys Gly

20 25 30

His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly

35 40 45

Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys Asp

50 55 60

Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val

65 70 75

&lt;210&gt; 38

&lt;211&gt; 53

&lt;213&gt; Artificial Sequence

&lt;400&gt; 38

Ala Thr Thr Thr Gln Ser Lys Arg Lys Gly His Phe Ser Arg Cys Pro

1 5 10 15

Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly Arg Cys Arg Phe Val Val

20 25 30

Ala Glu Gln Thr Pro Ser Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala

35 40 45

Arg Cys Glu Arg Val

50 53

&lt;210&gt; 39

&lt;211&gt; 30

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Cont  
319



&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 39

CAGCATATGG GGAATTCCAC CAGAAGTCCT

30

&lt;210&gt; 40

&lt;211&gt; 34

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 40

GGATCCCTAA ACTCTCTCAC ACCTTGCTCC AATG

34

&lt;210&gt; 41

&lt;211&gt; 30

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 41

CAGCATATGG CTACCACCAC ACAATCAAAG

30

&lt;210&gt; 42

&lt;211&gt; 225

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 42

GGGAATTCCA CCAGAAGTCC TGAAACTAAT GGCCTCCTCT GTGGAGACCC TGAGGAAAAC 60

TGTGCAGCTA CCACCACACA ATCAAAGCGG AAAGGCCACT TCTCTAGGTG CCCAAGCAA 120

TACAAGCATT ACTGCATCAA AGGGAGATGC CGCTTCGTGG TGGCCGAGCA GACGCCCTCC 180

TGTGTCTGTG ATGAAGGCTA CATTGGAGCA AGGTGTGAGA GAGTT 225

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Cont  
319

&lt;210&gt; 43

&lt;211&gt; 159

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 43

GCTACCACCA CACAATCAAA GCGGAAAGGC CACTTCTCTA GGTGCCCCAA GCAATACAAG 60

CATTACTGCA TCAAAGGGAG ATGCCGCTTC GTGGTGGCCG AGCAGACGCC CTCCTGTGTC 120

TGTGATGAAG GCTACATTGG AGCAAGGTGT GAGAGAGTT 159

&lt;210&gt; 44

&lt;211&gt; 53

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 44

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

5

10

15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Asn Pro Ser Thr

20

25

30

Pro Ser Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg

35

40

45

Val Asp Leu Phe Tyr

50

&lt;210&gt; 45

&lt;211&gt; 48

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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out  
319

&lt;400&gt; 45

Asn Ser Asp Ser Glu Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

5

10

15

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys

20

25

30

Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Leu Phe Tyr

35

40

45

&lt;210&gt; 46

&lt;211&gt; 83

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 46

Asp Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly

1

5

10

15

Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys

20

25

30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

35

40

45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Asn Pro Ser Thr Pro Ser

50

55

60

Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp

65

70

75

80

Leu Phe Tyr

&lt;210&gt; 47

&lt;211&gt; 249

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Cont  
B19

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 47

GATGGAATT CCACCAGAAG TCCTGAACT AATGGCCTCC TCTGTGGAGA CCCTGAGGAA 60  
 AACTGTGCAG CTACCACCAC ACAATCAAAG CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG 120  
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGAACCCC 180  
 TCGACGCCCT CCTGTGTCTG TGATGAAGGC TACATTGGAG CAAGGTGTGA GAGAGTTGAC 240  
 TTGTTTAC 249

&lt;210&gt; 48

&lt;211&gt; 159

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 48

CGGAAAGGCC ACTTCTCTAG GTGCCCCAAG CAATACAAGC ATTACTGCAT CAAAGGGAGA 60  
 TGCCGCTTCG TGGTGGCCGA GCAGAACCCC TCGACGCCCT CCTGTGTCTG TGATGAAGGC 120  
 TACATTGGAG CAAGGTGTGA GAGAGTTGAC TTGTTTAC 159

&lt;210&gt; 49

&lt;211&gt; 144

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 49

AACAGCGACT CTGAGTGCCC CAAGCAATAC AAGCATTACT GCATCAAAGG GAGATGCCGC 60  
 TTCGTGGTGG CCGAGCAGAC GCCCTCCTGT GTCTGTGATG AAGGCTACAT TGGAGCAAGG 120  
 TGTGAGAGAG TTGACTTGTT TTAC 144

&lt;210&gt; 50

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319

<211> 30

<212> DNA

<213> Artificial Sequence

<400> 50

AGCATATGCG GAAAGGCCAC TTCTCTAGGT

30

<210> 51

<211> 30

<212> DNA

<213> Artificial Sequence

<400> 51

CTGGATCCTA GTAAAACAAG TCAACTCTCT

30

<210> 52

<211> 30

<212> DNA

<213> Artificial Sequence

<400> 52

GAAATAATTT TGTTTAACTT TAAGAAGGAG

30

<210> 53

<211> 30

<212> DNA

<213> Artificial Sequence

<400> 53

AGGAGGGCGT CGAGGGGTTC TGCTCGGCCA

30

<210> 54

<211> 30

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Cont  
3/19

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 54

TGGCCGAGCA GAACCCCTCG ACGCCCTCCT

30

&lt;210&gt; 55

&lt;211&gt; 30

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 55

TCTATGCGCA CCCGTTCTCG GAGCACTGTC

30

&lt;210&gt; 56

&lt;211&gt; 35

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;400&gt; 56

TATACATATG AACAGCGACT CTGAGTGCCC CAAGC

35

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Cont  
319